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(54) Title: COMPOSITIONS FOR USE IN IDENTIFICATION OF BACTERIA

(57) Abstract: The present invention provides oligonucleotide primers and compositions and kits containing the same for rapid identification of bacteria by amplification of a segment of bacterial nucleic acid followed by molecular mass analysis.



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# INTERNATIONAL SEARCH REPORT

International application No.

PCT/US05/05356

## A. CLASSIFICATION OF SUBJECT MATTER

IPC(8): C07H 21/02( 2006.01);C12Q 1/68( 2006.01)

USPC: 536/23.1;435/6

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 536/23.1; 435/6

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

Please See Continuation Sheet

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	New England BioLabs Catalog, 1998, pages 121, 284.	1-3, 5, 6, 14, 15
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Y		4, 7, 16
Y	NUBEL et al. PCR primers to amplify 16S rRNA genes from Cyanobacteria. Applied and Environmental Microbiology. August 1997, Vol. 63, No. 8, pages 3327-3332, see entire document.	1-7, 14-16
Y	BUCK et al. Design strategies and performance of custom DNA sequencing primers. Biotechniques. September 1999, Vol. 27, No. 3, pages 528-536, see entire document.	1-7, 14-16
Y	US 6,613,509 B1 (CHEN) 02 September 2003 (02.09.2003), see entire document.	1-7, 14-16

☐ Further documents are listed in the continuation of Box C.

☐ See patent family annex.

* Special categories of cited documents:	
"A" document defining the general state of the art which is not considered to be of particular relevance	"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"E" earlier application or patent published on or after the international filing date	"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"O" document referring to an oral disclosure, use, exhibition or other means	
"P" document published prior to the international filing date but later than the priority date claimed	"&" document member of the same patent family

Date of the actual completion of the international search

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# INTERNATIONAL SEARCH REPORT

International application No.

PCT/US05/05356

## Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:  
because they relate to subject matter not required to be searched by this Authority, namely:
  
2. ☐ Claims Nos.:  
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:
  
3. ☐ Claims Nos.:  
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

## Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:  
Please See Continuation Sheet

1. ☐ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.
  2. ☐ As all searchable claims could be searched without effort justifying additional fees, this Authority did not invite payment of any additional fees.
  3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:
  
  4. ☒ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.: 1-7 and 14-16
- Remark on Protest**
- ☐ The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.
- ☐ The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.
- ☐ No protest accompanied the payment of additional search fees.

**BOX III. OBSERVATIONS WHERE UNITY OF INVENTION IS LACKING**

This application contains the following inventions or groups of inventions which are not so linked as to form a single general inventive concept under PCT Rule 13.1. In order for all inventions to be examined, the appropriate additional examination fees must be paid.

Group I, claim(s) 1-16, drawn to nucleic acids.

Group II, claim(s) 17-22, drawn to methods of bacterial detection.

This application contains claims directed to more than one species of the generic invention. These species are deemed to lack unity of invention because they are not so linked as to form a single general inventive concept under PCT Rule 13.1.

In order for more than one species to be examined, the appropriate additional examination fees must be paid. The species are as follows:

Species I - SEQ ID NO: 26.  
Species II - SEQ ID NO: 388.  
Species III - SEQ ID NO: 29.  
Species IV - SEQ ID NO: 391.  
Species V - SEQ ID NO: 37.  
Species VI - SEQ ID NO: 362.  
Species VII - SEQ ID NO: 48.  
Species VIII - SEQ ID NO: 404.  
Species IX - SEQ ID NO: 160.  
Species X - SEQ ID NO: 515.  
Species XI - SEQ ID NO: 261.  
Species XII - SEQ ID NO: 624.  
Species XIII - SEQ ID NO: 231.  
Species XIV - SEQ ID NO: 591.  
Species XV - SEQ ID NO: 349.  
Species XVI - SEQ ID NO: 711.  
Species XVII - SEQ ID NO: 240.  
Species XVIII - SEQ ID NO: 596.  
Species XIX - SEQ ID NO: 58.  
Species XX - SEQ ID NO: 414.  
Species XXI - SEQ ID NO: 6.  
Species XXII - SEQ ID NO: 369.  
Species XXIII - SEQ ID NO: 246.  
Species XXIV - SEQ ID NO: 602.  
Species XXV - SEQ ID NO: 256.  
Species XXVI - SEQ ID NO: 620.  
Species XXVII - SEQ ID NO: 344.  
Species XXVIII - SEQ ID NO: 700.  
Species XXIX - SEQ ID NO: 235.

## INTERNATIONAL SEARCH REPORT

International application No.  
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Species XXX - SEQ ID NO: 587.

The inventions listed as Groups I-II do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features for the following reasons: There is no special technical feature which distinguishes the groups because the NEB catalog (2002) p. 141, teaches a composition which comprises every 24 mer, which composition will inherently meet claim 2 and which anticipates claim 2, therefore demonstrating that there is no special technical feature linking the groups.

The species listed above do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, the species lack the same or corresponding special technical features for the following reasons: Each of the species is structurally and functionally distinct with no demonstrated relationship. Further, as noted above, there is no special technical feature linking the species since the NEB catalog anticipates claim 2.

Continuation of B. FIELDS SEARCHED Item 3:

EAST, GOOGLE, STN

search terms: PCR, primer, bacteria, mass spectroscopy, nontemplated, resin, magnetic, bead, ion, exchange